Interactive Video Smoking Cessation Intervention

Grant Number: R44 CA64028-03

Abbreviated Abstract

Objective: The objective of this project was to test the short-term (90 days) efficacy of an automated behavioral intervention for smoking cessation, the "1-2-3 Smokefree" program, delivered via an Internet website. Design: Randomized control trial. Subjects surveyed at baseline, immediately post-intervention, and 90 days later. Settings: The study and the intervention occurred entirely via the Internet site. Subjects were recruited primarily via worksites, which referred potential subjects to the website. Subjects: The 351 qualifying subjects were notified of the study via their worksite and required to have Internet access. Additionally, subjects were required to be over 18 years of age, smoke cigarettes and be interested in quitting smoking in the next 30 days. Eligible subjects were randomly assigned individually to treatment or control condition by computer algorithm. Intervention: The intervention consisted of a video-based Internet site that presented current strategies for smoking cessation and motivational materials tailored to the user's race/ethnicity, gender and age. Control subjects received nothing for 90 days and were then allowed access to the program. Main outcome measures: The primary outcome measure was abstinence from smoking at 90-day follow-up. Results: At follow-up, the cessation rate at 90 days was 24.1% (n=21) for the treatment group and 8.2% (n=9) for the control group (p=.002). Using an intent-to-treat model, 12.3% (n=21) of the treatment group were abstinent, compared to 5.0% (n=9) in the control group (p=.015). Conclusions: These evaluation results suggest that a smoking cessation program, with at least short-term efficacy, can be successfully delivered via the Internet.

Primary Investigator

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Dr. John Noell was a research scientist and the chief technical officer at the Oregon Center for Applied Science when this grant was awarded. Dr. Noell has an extensive background in instructional design, behavior change, and the development of tailored interactive multimedia programs. Because of his experience in interactive technology, he was invited to serve as an expert on the Department of Health and Human Services Science Panel on Interactive Communication and Health. He is the principal investigator on this project.

Research Team & Affiliations

Co-Investigator: Dennis Ary, Oregon Center for Applied Science
Co-Investigator: Blair Irvine, Oregon Center for Applied Science
Project Coordinator: Lynne Swartz and Mona Duprey, Oregon Center for Applied Science

Total Budget

$749,964.00

Research Objectives

Aim 1: To test the short-term (90 days) efficacy of an automated behavioral intervention for smoking cessation, the "1-2-3 Smokefree" program, delivered via an Internet website.

Theory/Hypothesis

Our hypothesis is that an internet-delivered multimedia intervention with a behavior-change theoretical foundation that encouraged and supported the use of pharmacological smoking cessation aids could assist a smoker to quit smoking.

Experimental Design

The study was a randomized control clinical trial. Subjects were randomly assigned to the treatment condition, which received the intervention, or to a wait-list control group that received access to the program after a waiting period of 90 days.

Final Sample Size & Study Demographics

A total of 351 subjects -- 52% female (n=182), 48% male (n=169) -- were enrolled and randomly assigned to either the treatment or control group. Seven percent (n=26) of the subjects were 18-25, 38% (n=134) were 26-39 years old, 48% (n=170) of the subjects were 40-55 years old, and 6% (n=21) were over 55. Most subjects (83.5%; n=288) self-identified as Caucasian, 6.7% (n=23) as African-American, 4.3% (n=15) as Hispanic, 2.0% (n=7) as Native American/Indian, and 3.5% (n=12) as "Other."

Data Collection Methods

All surveys were administered via the Internet.

Outcome Measures

We assessed demographics (age, gender, race/ethnicity), tobacco use (number of cigarettes smoked per day and use of other forms of tobacco), time from waking to first cigarette, stage of change (readiness to quit), number of previous quit attempts, techniques used in previous quit attempts (including pharmacological aids, counseling, and self-help guides), presence of others in household who smoke, socialization with other smokers, reasons for quitting, self-efficacy (i.e., confidence in ability to quit), perceived difficulty of not smoking under various conditions (i.e., when drinking, stressed, angry,

talking on phone, or if gaining weight) and perceived benefits of quitting (i.e., feel better, avoid health problems, have more money, smell better, feel more in control). Measures administered immediately post-intervention included stage of change, strength of desire to quit, self-efficacy, perceived difficulty of not smoking under various conditions, perceived benefits of quitting, how helpful they found the program, and whether or not they would recommend it to others attempting to stop smoking. At 90-day follow-up, the same measures were administered as at baseline, excepting demographic items.

Evaluation Methods

Enrollment of subjects, informed consent, randomization, and all assessments took place online. The requirements for participation were being 18 years or older, currently smoking cigarettes on a daily basis, considering quitting smoking in the next 30 days, and being able to access the website. If the subject agreed to participate and was eligible, an online pretest (T1) was presented. The program then randomly assigned subjects to treatment (immediate access to the smoking cessation program) or control condition (access after a 3-month waiting period). All subject completed a post-test (T2). All subjects were prompted via automatically generated email messages to complete an additional assessment at 90 days (T3) after registration.

Research Results

Follow-up Sample Outcomes

For the sample of 197 subjects who returned to complete the 90-day follow-up survey, the cessation rate among treatment group subjects (n=87) was 24.1% (n=21). The cessation rate for control condition subjects (n=110) was 8.2% (n=9). Logistic regression analysis was carried out to determine if there were differential condition effects across age, gender, race/ethnicity, self-efficacy, and number of cigarettes smoked per day at baseline (i.e., interactions with condition). There were no significant interactions between condition and the other main effects (i.e., age, gender, race/ethnicity, self-efficacy, and number of cigarettes smoked per day at baseline). Thus, these terms were dropped from the model and a simple Chi-Square test was carried out. The Chi-Square test indicated that there was a significant difference across condition (X2 = 9.58, 1df, p=.002; OR = 3.57, CI 1.54-8.27). No specific aspect of program use (e.g., number of optional screens viewed) predicted abstinence at follow-up. Bivariate comparisons of baseline data for those lost to follow-up at 90 days and those who were retained did not result in any significant differences that could be used to explain the observed attrition.

Intent-to-Treat Outcomes

The cessation rate among all treatment group subjects (n=171) was 12.3% (n=21) and among control condition subjects (n=180) was 5.0% (n=9). As with the follow-up sample, logistic regression analysis indicated that there were no significant interactions between condition and the other main effects (i.e., age, gender, race/ethnicity, self-efficacy, and number of cigarettes smoked per day at baseline). Thus, these terms were dropped from the model and a simple Chi-Square test was carried out. The Chi-Square test indicated that there was a significant difference across condition (X^2 = 5.95, 1df, p=.015; OR = 2.66, CI 1.18-5.99). No specific aspect of program use (e.g., number of optional screens viewed) predicted abstinence at follow-up.

Barriers & Solutions

No major problems encountered

Product(s) Developed from This Research

Quitcigs.org